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Delay in safe motherhood

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Document Version

Publisher's PDF, also known as Version of record

Publication date:
2011

[Link to publication in University of Groningen/UMCG research database](#)

Citation for published version (APA):

van Lonkhuijzen, L. R. C. W. (2011). *Delay in safe motherhood*. [Thesis fully internal (DIV), University of Groningen]. [s.n.].

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Chapter 8

Discussion and Conclusion

Delay

In this thesis the effect of several interventions aimed at reducing delay in receiving appropriate treatment when complications of pregnancy and childbirth arise were examined.¹⁻³ In this last chapter the findings are summarised and several ways forward are suggested. As described in the introduction, the concept of delay as an underlying factor for maternal mortality was employed as the framework on which this thesis was built. Delay can occur in three phases between the onset of a complication during pregnancy and childbirth and the appropriate treatment in hospital.⁴

Phase one

Phase one delay occurs between the onset of the complication and the decision that help should be sought. From a public health perspective this delay is an important cause of maternal and neonatal mortality and morbidity. Most factors that influence the first phase of delay, however, are outside the influence of physicians working in a hospital. For instance, the status of a woman and her power to make decisions independently, her educational level, her economic status and her interpretation of clinical signs and symptoms, are all difficult to influence from the confines of a hospital. On the other hand, the perceived quality of care and previous experience with the health care system will a priori influence the decision to seek care. The delivery of high quality care is directly related to the mutual efforts of health care staff. Although the research in this thesis primarily focussed on reducing delay in the second and third phase, improving quality through efforts specifically pertaining to these phases will also potentially reduce the first phase of delay.

Phase two

Phase two delay pertains to the time it takes to reach a health care facility after the decision has been made to seek help. When complications occur during birth, reaching a hospital may be very difficult in large parts of the world. Living far away from a hospital, absence of proper means of transport and poor or inaccessible roads are barriers that may cause delay. Many interventions have been described in the literature to reduce this delay.^{5;6} These interventions aim to make transport available for women when they need it. Different means of transport have been tried. The success of such transportation means will depend on their accessibility, the affordability and acceptability. Bicycle ambulances or motorcycles are relatively cheap and can be located in the community but have not always been successful. Women in labour did not like to be exposed in public while being transported on a bicycle.^{7;8} Motorised ambulance services are expensive and depend on communication between the hospital and the woman in need.⁹ Others aimed at making funds available for women in emergency situations through finance or loan schemes which enable women to use existing taxi services or

other forms of public transportation.^{10;11} As an alternative, interventions in the long run may aim at optimizing geographical distribution of health care facilities^{12;13} or road improvement.¹⁴

Maternity Waiting Homes

In this thesis we examined an alternative strategy for getting women close to a hospital prior to the onset of labour. The concept is simple, women travel to a facility when they are still able to do so and await labour. In chapter two the results of an observational study comparing outcome for women who decided to use the waiting home and those who did not are described. This observational study design has its limitations as selection bias will influence the results. However, the data showed that the concept of risk selection was applied: Women who stayed as a waiter had more often high risk pregnancies and were living a longer distance from the hospital. It also became clear though, that not all women who could have benefitted came to the maternity waiting home early. Some women with high risk pregnancies and who were living far away only presented themselves at the hospital at a time when complications had already occurred. Apparently, there are barriers that prevent women to go and stay in a waiting home.

In chapter three the available literature to further explore what characteristics influence the use of a maternity waiting home was reviewed.

The success of this concept will mostly depend on two factors: The willingness of women to stay in a maternity waiting home and secondly the accessibility and the quality of the care provided in the hospital. For these reviews we did not find any experimental studies. Following publication of the Cochrane review, the largest observational study to date was published describing the experience in Attat hospital in Ethiopia¹⁵. Outcome for 6805 women who delivered in hospital after staying in a maternity waiting home were compared to outcome for 17,343 women who only arrived in the hospital after labour had started. The authors found a maternal mortality ratio of 89.9 per 100,000 (95% CI 41.1-195.2) live births and a stillbirth rate of 17.6 per 1000 births (95% CI 14.8-21.0) for the waiters as compared to 1333.1 (95% CI 1156.2-1536.7) and 191.2 (95% CI 185.4-197.1) for non waiters. The caesarean section rate was 38.5% for waiters as compared to 20.3% for non waiters and none of the waiters experienced uterine rupture versus 5.8% in the non-waiters group. The authors of this large observational study concluded that at least part of the better outcome for the waiters could be explained by the timely and appropriate obstetric management of these women. They also recognise, however, that their study was hampered by the same methodological difficulties as other studies investigating the same topic. Only 5% of women in the catchment area is giving birth in the hospital. Waiters and non waiters will be selected from the population on the basis of different characteristics. This will certainly have introduced bias. On the other hand, this

study also clearly demonstrates that building and operating a well functioning maternity waiting home which women are willing to use is feasible. To clearly establish the effectiveness of the maternity waiting home as a way to reduce delay, a cluster randomised trial would be optimal. However, given the fact that these trials are difficult to perform and therefore expensive, they are not likely to be initiated. The next best step would be to design and undertake a study evaluating the effect of a maternity waiting home on a population level. A population based cohort study, or matched case control study could fill this gap. In addition, whereas the maternity waiting home in Ethiopia was successful in attracting women, others were less successful^{16;17}. Many questions remain with regard to finding the optimal prerequisites to start a maternity waiting home and eliminate potential barriers: Who makes the decision to go and stay in a maternity waiting home? Do women need permission from their husband or their mother in law? What may solve the problem of leaving behind a family? What factors influence the decision making process? And lastly, how can we create the optimal environment for women to stay in a maternity waiting home?

The success of the maternity waiting home will likely be affected by the quality of care in the hospital or clinic. The perceived quality of care will influence the decision to leave their home and wait at the facility. It is of no use waiting at a hospital if subsequent care received during labour is below standard. This brings us to the third phase of delay.

Phase Three

The third phase of delay is the time it takes to receive appropriate treatment after a health care facility has been reached. This problem should not be underestimated, reaching a health care facility will not necessarily avoid perinatal and maternal morbidity and mortality. A substantial portion of maternal deaths takes place in hospital.¹⁸ Audit results in Tanzania and the Gambia demonstrate that phase three delay played a role in half to three quarters of the cases of maternal death.^{19;20} Similarly, audit results of neonatal deaths identified phase three delay as an underlying cause in three quarter of all of cases.²¹ Most maternal in low income countries could be avoided provided appropriate treatment is started in time. Failing to adhere to standard protocols was the most frequent healthcare-provider avoidable factor pertaining to maternal deaths in South Africa²². In the second part of this thesis strategies to reduce phase three delay and improve guideline adherence were examined.

Training and implementing change

Training for emergency obstetrics is aimed at improving the knowledge and skills of birth attendants. Its goal is to improve the quality and timeliness of necessary interventions once a complication occurs.

Assessing the effect of training has shown to be very difficult. In chapter four the existing literature describing training efforts aimed at improving emergency obstetric care in resource poor settings was reviewed. Many enthusiastic reports were encountered, with most authors describing positive results. However when systematically evaluating the individual studies the picture was not as clear. Most trainees enjoyed the opportunity to learn and practise new skills and many reports described an improvement in knowledge and skills. However the health care workers behaviour and an improvement in the outcome for the mother and her newborn were not apparent in most of the cases. Training obstetric emergencies apparently is not enough to change behaviour and improve outcome. Aside from insufficient knowledge and skills other barriers likely contribute to the lack of behavioural change.

Training obstetric emergencies can in many ways be compared to the introduction of guidelines. Both advocate a structured approach for a specific set of problems with the aim of improving quality of care. Richard Grol provides a general framework which can be used to approach the difficulties with guideline introduction. He describes the different steps health care workers go through when adopting guidelines.²³

- Orientation: Awareness of guideline existence, health care workers develop interest and become committed
- Insight: Understanding guideline content and developing awareness of how own individual performance differs from the guideline.
- Acceptance: there is a positive attitude towards the new guideline and there is an intention to change.
- Change: actual implementation in practice and recognition of positive outcomes with maintenance of change.

With every step barriers may exist both within the individual and outside, within the organisation, the patient, or even within the guideline²⁴: Interventions specifically aimed at those barriers encountered will support the implementation of change. When summarising the different interventions such as reminders, dissemination of educational materials, audit and feedback, and multifaceted interventions, no strong evidence to advice on a specific strategy was found. Different strategies may support the introduction of guidelines. Multifaceted interventions including educational outreach has led to improvements in performance²⁵

When implementing change in order to reduce maternal mortality the perception of health care workers regarding the causes of maternal death, the underlying problems, as well as their own role in the improvement of care are equally important. Unpublished focus group discussions with health care workers in Malawi and Surinam concerning these topics showed that most of them underestimate the maternal mortality ratio. The contributing factors they identify are mostly outside their own sphere of influence. This perception may be no different from that in other countries but does have implications when behavioural change is the objective. As long as health care workers are not aware that quality improvement efforts are also within their own reach, they may be less willing to change their behaviour.

Training will tackle some barriers that may inhibit behavioural change such as lack of awareness, lack of familiarity, lack of self-efficacy and inertia of previous practice. But other, external, barriers may also withhold health care workers from changing their behaviour. Several characteristics of a training program can assist in identifying such barriers. Conducting a course in emergency obstetrics for healthcare workers within their own institution will help identify lack of resources or insufficient facilities that prevent the application of newly acquired skills. It is of no use teaching somebody to perform a vacuum extraction if the equipment to perform such a procedure is not available or if the equipment cannot be properly cleaned or if legal implications prevent midwives from performing vacuum extraction.²⁶ Follow-up after completion of a course will also contribute to the identification of barriers such as resistance of patients, increased cost, and problems related to work load.

Supporting guideline introduction

In Malawi an alternative approach to training was used to change behaviour and improve the management of eclampsia: In chapter five the introduction of a guideline for the treatment of eclampsia is described. Introduction was supported by the use of treatment and observation charts. Management guidelines for the treatment of severe pre eclampsia and eclampsia are in place in many countries in order to improve outcome. However in Malawi the management of this condition remained substandard after introduction of a guideline. Only after introduction of a set of treatment and observation charts the behaviour of the health care staff changed: Clinical parameters were observed in a timely fashion and appropriate treatment was increasingly provided according to the guideline. Following the introduction of the charts the number of emergency caesarean sections decreased significantly.

We believe the charts, in combination with reminders during ward rounds, supported guideline adherence in several ways. First, it served as a reminder: the charts clearly indicate what clinical parameters should be recorded and what

treatment should subsequently be given. Secondly, it raises awareness about the fact that monitoring is important when managing eclampsia. Lastly, it may aid the communication process and overcome barriers between doctors and nurses. Nurses know what is expected from them and what actions doctors are supposed to take. Doctors will have a clear picture of the condition of the patient.

This last intervention, introduction and implementation of treatment and observation charts, needs more exploration. For instance, it needs to be evaluated in other hospitals with a different incidence of eclampsia. Moreover, a similar approach can be beneficial for other obstetric emergencies such as postpartum haemorrhage and septic complications.

Quality of care

The final part of the thesis concentrates on the quality of labor and delivery care in the Netherlands. It highlights quality improvement by changing behaviour in a high resource setting. Although focused on a high resource setting, findings may also benefit low resource settings as the prevalence of complications in those settings is much higher.

The maternal mortality ratio in the Netherlands is one of the lowest in the world. This does not mean, however, that the quality of care cannot be improved. Audit of severe maternal morbidity cases showed substandard care factors to be present in 68% of cases.²⁷ Similarly, in the UK underestimation of the degree of urgency when complications arose (phase three delay) contributed significantly to maternal deaths.²⁸

In chapter six we focused on the validity of skills assessment for the treatment of postpartum haemorrhage and shoulder dystocia. Having a reliable tool to assess the skills of health care workers assisting birth will enable quality assurance. No such tool exists, however. If it would exist, it would be most useful if it could be used without exposure of patients to trainees. Proficiency to handle obstetric emergencies should preferably be demonstrated before a health care worker is taking care of women in labour independently. Simulating obstetric emergencies has been used to train and practise clinical skills. We examined whether behaviour in a simulation setting was a reliable predictor of behaviour in clinical practice. Our results showed that observers could reliably register most actions performed during the simulated treatment of shoulder dystocia and postpartum haemorrhage. They did, however, poorly agree on the quality of the performance. So while our evaluation method was practical and while it was considered very useful by the participants, it is not suitable for use as a quality assurance tool. There is a need for a set of objective criteria to determine quality.

When quality of care during labour is assessed for audit purposes, this is commonly done by evaluating clinical notes and records supplemented by results from other diagnostic instruments. These data are of limited value, however, when team cooperation, communication and precise sequence of events need to be evaluated. Real time observation of teamwork in the labour ward has not been described. The use of video to capture events is a promising tool to evaluate quality of care. In addition it can be used for feedback and educational purposes.

Video

In chapter seven the results of focus group discussions examining the perception of patients and staff regarding the use of video in the labour room is reported. Many issues were identified during the focus group discussions such as the need for a clear definition of the scope and use of video, securing access to the footage, and emotions such as fear and shame for being exposed. On the other hand it became clear that many possible benefits exist. These perceptions of patients and staff about the benefits and limitations of video evaluation are important when obtaining consent for its use. Hospital management will also be worried about the potential use of the video footage designed for quality assurance purposes in legislative procedures.

Different countries will have different approaches when it comes to the use of such video footage in court. The use of video capture in the labour room is a novelty which makes that there is no past record for judges to base their conclusions on. In the Netherlands, different laws come into play when assessing legal implications²⁹ First, there is the law that forms the basis of the doctor-patient relationship, but also the law that protects people against the use of personal data as well as the “employee council” that has powers when it concerns the introduction of video surveillance systems within a company.³⁰ Therefore while we see many potential benefits of the use of video capture in the labour room it will probably take time and effort to make its entrance in clinical practice.

Two overarching themes emerge from this thesis: the first concerns the lack of evidence with regard to practical solutions aimed at improving quality of care in low resource setting, especially coming from health centres and rural hospitals in which many of the maternal deaths occur. In both our reviews we found that good evidence is lacking. This also holds true for other non-clinical interventions such as improving community knowledge and behaviour or transport interventions.³

Secondly delivering good quality care in health care facilities in a low resource setting can potentially contribute to reducing delay in all phases. Whereas safe motherhood efforts have aimed at the community we believe that the top of the referral pyramid is just as important. It is of no use providing antenatal care,

raising awareness about complications, empowering women to go to hospital, organising transport etc., as long as subsequent care in hospitals in case of complications is far below standard.³¹ An example demonstrating that women are able to recognize and appreciate good quality care comes from Matlab. A maternity clinic in an intervention area for improvement of maternity care also attracted women from control areas. In the same study, accessibility and availability of comprehensive care in the district hospital accounted for the reduction in maternal mortality.³² Moreover in other areas improvement of services resulted in an increase in utilization.³³ Even referring nurse-midwives take the perceived quality of care in the referral hospital into account in their decision if and when to refer.³⁴

This thesis presents and discusses interventions that aim to reduce maternal and perinatal mortality and improve quality of care. Improving these outcomes are two important Millenium Development Goals. All through this thesis I have been quoting Hill who estimated that 535,900 women had died in 2005 and that the maternal mortality ratio had decreased with 2.5% per year in the previous years with no progress at all in Sub-Saharan Africa.³⁵ In 2010, new estimates were published based on a larger dataset.³⁶ According to these estimates 324,900 (320,100-394,300) maternal deaths occurred in 2008 as compared to 526,300 in 1980. This has resulted in a decline in the Maternal Mortality Ratio from 422 in 1980 to 320 in 1990 and 251 in 2008. The reduction would have been even greater if the effects of the HIV epidemic are excluded. These estimates provide a somewhat more optimistic picture. However, for the Millenium Development Goal to be reached the Maternal Mortality Ratio of 1990 will have to be reduced by 75% to 80 deaths per 100.000 live births by 2015. Therefore much work remains to be done.

Phase Four

In addition to the three phases of delay identified by Thaddeus and Maine a fourth phase has been identified. This phase does not deal with individual patients, but describes the delay in global health care reform addressing maternal and perinatal mortality. Resource allocation and the structure of health service delivery need to change in order to prevent maternal deaths.³⁷ And while I argued before that doctors should mainly aim their efforts at the part of the system that is within their influence, this does not mean they are otherwise powerless. Doctors should be concerned about the gross inequality in the world. Health is politics and doctors need to raise their political voice.^{38;39}

In conclusion: implementing change is the key to improving quality both in low and high resource countries. Good quality care may also reduce delay in phase one and two and will reduce perinatal and maternal morbidity and mortality. We know what needs to be done, so let's start doing it.

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